

UNITED STATES PATENT OFFICE.

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ALLOY FOR ELECTRICAL CONTACT-POINTS.

1,358,908.

Specification of Letters Patent. Patented Nov. 16, 1920.

No Drawing.

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To all whom it may concern:

Be it known that I, JOSEPH A. WILLIAMS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Alloys for Electrical Contact-Points, of which the following is a specification.

This invention relates to alloys, and more particularly to an alloy for contact points for electrical apparatus.

The principal object of the invention is to provide an alloy for electrical contact points, which possesses low resistance, sparks but slightly, has good wearing qualities, and will maintain smooth and clean contact surfaces. This is accomplished by employing a base metal of low electrical resistance, and treating this base metal in a suitable manner to enable it to resist spark erosion, caused by electric action by increasing the cohesion of its particles. As the particles of the alloy have become more compact, a smooth contact surface may be obtained, and due to the cohesion of the particles, the alloy will wear away extremely slowly and remain smooth and bright.

Heretofore, it has been the practice to use a metal or alloy for electrical contact points, which melts at a very high degree of heat, the theory being that the continuous sparking produced heat, which had a tendency to cause erosion or a wasting away of the contact points, and therefore the higher their melting point, the longer in time would they wear. This invention has been developed on a different theory, namely, that it was not necessary to use a metal or alloy having a high melting point, but it is more essential for the substance to possess the

quality of great cohesion between its particles. On account of the great cohesion between the particles, the substance or alloy when used as electrical contacts would not flake off by electric action, and consequently there would be little wearing away and the contacts would remain smooth.

As low electrical resistance is very desirable in contact points, silver which ranks high in this respect is employed for the base metal of the alloy of the present invention. The silver is melted by being heated in a crucible and a small quantity of lead is added thereto. The adding of the lead gives the quality to the silver of resisting the dry erosion usually caused by electric action. It has been found that adding one-half of one per cent. of lead to melting silver produces the most satisfactory alloy for electrical contact points. This alloy when used for electrical contacts, possesses low resistance, therefore the tendency to become heated is reduced to a minimum, and as a consequence it does not oxidize but remains bright, and does not waste away. Furthermore, on account of the great ductility and malleability of the alloy due to intense cohesion between its particles, it does not waste away by flaking off in granules from spark erosion, but remains smooth.

Having fully described my invention, what I claim is:

1. An alloy for electrical contact points consisting of silver and a sufficient quantity of lead to increase the cohesion of its particles but less than one per cent. of lead.

2. An alloy consisting of silver 99½% and lead ½ of 1%.

In testimony whereof I affix my signature.

JOSEPH A. WILLIAMS.